

AIR COMMAND AND STAFF COLLEGE

AIR UNIVERSITY

**The Unsinkable Aircraft Carrier –
An American Response to the Chinese Anti-Access/Area Denial (A2/AD) challenge**

By

John O. Birkeland, Major, RNoAF

A Research Report Submitted to the Faculty

In Partial Fulfillment of the Graduation Requirements

Advisor: Dr. Jeffrey M. Reilly

Maxwell Air Force Base, Alabama

April 2013

Report Documentation Page			Form Approved OMB No. 0704-0188		
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE APR 2013		2. REPORT TYPE		3. DATES COVERED 00-04-2013 to 00-04-2013	
4. TITLE AND SUBTITLE The Unsinkable Aircraft Carrier -An American Response to the Chinese Anti-Access/Area Denial (A2/AD) Challenge			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S)			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Air Command And Staff College,Air University,Maxwell AFB,AL,36112			8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 48	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Disclaimer

The views expressed on this academic research paper are those of the author and do not reflect the official policy or position of the US Government or the Department of Defense. In accordance with Air Force Instruction 51-303, it is not copyrighted, but is the property of the United States government.

Abstract

After the demise of the Soviet Union, the United States' ability to project military power in defense of the nation's interests have in essence gone unchallenged. However, with the emergence of regional powers in areas of vital interest to the USA this hegemonic position in power-projection capabilities seems to be coming to an end. The People's Liberation Army (PLA) is building up military capabilities and is developing anti-access/area denial (A2/AD) capabilities. If the current buildup continues and goes unchallenged, the cost of projecting power into the East China Sea might reach prohibitive levels, to the concern of US military leaders. Are the American bases in Japan and at Guam then the closest US forces can get to the area of operations (AO) in a conflict over Taiwan? This essay explores the option of using Taiwan as a land based focal point in Air Sea Battle in a military engagement with China. The essay explains the development of modern Chinese military doctrine, with the focus on the "active defense" of the PLA Air Force (PLAAF), and the A2/AD capabilities through the concept of *shashoujian*, or "assassin's mace." It goes on to discuss the emerging concept of Air Sea Battle, developed by the US Air Force and the US Navy in the face of the increasing challenge of getting access to the operational area. The capabilities of the PLA pose such a significant threat to the Taiwanese forces on the island and the US forces that are set up to assist the island in the event of attack, that the author suggests the use of Taiwan itself as a focal point in an Air Sea Battle over the island. By forward positioning new technology, air superiority fighters, and modern naval assets the United States will turn the A2/AD around on its head, making US capabilities on Taiwan challenge the PLA's A2/AD measures before hostilities begin.

Contents

Disclaimer	ii
Abstract	iii
Part 1. Introduction	1
Part 2. Chinese doctrine – Shashoujian.....	3
Part 3. US doctrine – Air Sea Battle	10
Part 4. An Air Sea Battle over Taiwan.....	15
Deterrence	16
Cyber and information warfare	17
The initial strike and the fight for air superiority	18
Denying access to US forces.....	23
The Unsinkable Aircraft Carrier	26
Part 6. Conclusion.....	34
 Bibliography.....	 40

Part 1. Introduction

In the course of the 20th century the US military's ability to project power overseas was demonstrated in the two World Wars, in Korea in the 1950s, in Vietnam in the 1960s and 70s, in the Persian Gulf in the 1990s, in addition to several other smaller engagements throughout the 20th century. After the demise of the Soviet Union, the ability to project military power in defense of the nation's interests have in essence gone unchallenged.¹ However, with the emergence of regional powers in areas of vital interest to the USA this hegemonic position in power-projection capabilities seems to be coming to an end. In the case of China, the People's Liberation Army (PLA) is building up military capabilities and is developing doctrines for local power-projection. And more importantly to the USA: The PLA is developing what military analysts call anti-access/area denial (A2/AD) capabilities. If the current buildup continues and goes unchallenged, the cost of projecting power into the East China Sea might reach prohibitive levels, to the concern of US military leaders.² This problem has led to the current discussions of A2/AD in general, often using a potential conflict over Taiwan as an example.³ The United States is committed to uphold her obligations signed into the Taiwan Relations Act (TRA) in 1972, where the United States is obliged to stand by Taiwan in the case of military aggression towards the island.⁴ In addition to this, the United States also has significant interests in the East China Sea and the safe passage of vessels following one of the world's main sea lines of communication (SLOC) which goes through the area.⁵ The Chinese on the other hand now control the world's second largest economy, and the country is growing in all aspects, including militarily. China is constitutionally committed to reuniting China and Taiwan into *one China*, led from Beijing. Although the Anti-Secession Law of 2005 states that Taiwan will be given

autonomy to a large extent, the same law points out the need to intervene with “non-peaceful” means in the case of a declaration of independence by Taipei.⁶

However, the ongoing discussion of US military power-projection into the East China Sea seems to disregard the use of Taiwan herself as a staging point for US forces. Given the existing and developing Chinese anti-access/area denial assets and capabilities being deployed to the East China Sea the question arises: Are the American bases in Japan and at Guam then the closest US forces can get to the area of operations (AO) in a conflict over Taiwan? The research question of this essay is therefore: *Should the United States use Taiwan as a land based focal point in Air Sea Battle?*

This essay will first present extracts from the development of modern Chinese military doctrine, with the focus on the “active defense” of the PLA Air Force (PLAAF), and the anti-access/area denial capabilities through the concept of *shashoujian*, or “assassin’s mace.” Then, the emerging concept of Air Sea Battle, developed by the US Air Force and the US Navy in the face of the increasing challenge of getting access to the operational area, is presented. Finally, a discussion on a potential conflict over Taiwan will be presented, with the current capabilities of the PLA posing a significant threat to the Taiwanese forces that are set up to defend the island. A suggestion is given to preposition certain US forces and capabilities to Taiwan in order to turn around the anti-access/area denial scenario in favor of Taiwan and the United States.

Part 2. Chinese doctrine – Shashoujian

China's military strategy is based on what Mao Tse-tung called an "active defense," and is largely based on a fundamental understanding of one's own forces being inferior to the adversary in weapons and capabilities.⁷ Mao himself thought that there was a reasonable probability of an invasion from either the United States or the Soviet Union in the 1960s, and meant that the "active defense" strategy would be best supported by manufacturing the tools of war in hidden factories deep in the Chinese interior. This hampered the development of a modern war fighting force in the 1960s and 70s.⁸ But with the change of the political leadership in addition to economic and political reforms came a fundamental change in doctrine. In 1985, the Chinese leaders declared that there was a minimal chance of a major nuclear conflict with another major power, and changed the focus to the regions in Chinese immediate proximity.⁹ This change in focus forced a change in military thought into a force with a rapid-reaction strategy, and where the PLA had to *attack* and end the war early in order to meet military and political objectives.¹⁰ China followed and learned a great deal from conflicts such as the US engagement in Vietnam in the 1960s and 70s, the Brits in the Falkland Islands war of 1982, and of course the conflict that is said to have "sent shockwaves through China's military community," the 1991 Persian Gulf War.¹¹ With the American success of 1991 fresh in their minds the PLA leadership recommended reducing the number of soldiers and improving equipment, training and "actual combat capability," prioritizing conventional arms over nuclear weapons, introducing high-technology including PGMs and stealth aircraft, and building a rapid-response force.¹² Given that the success in the Persian Gulf War seemed largely founded on the domination of the air domain, emphasis was given to air superiority as a cornerstone in winning

regional conflicts. As military capabilities of the Chinese have improved, the emphasis has notably shifted from stressing the “defense” part of the strategy to stressing the “active” part, in a more offensively oriented strategy as a whole.¹³

The 1991 Persian Gulf War opened the eyes of the Chinese to the importance of aerial capabilities and air superiority. With several analyst groups working on new and improved strategies for the employment of military force in a modern world, the operational principles of the PLA Air Force (PLAAF) in the late 1990s included “surprise and first strikes,” “concentration of best assets,” “offensive action as a component of air defense,” and “close coordination.”¹⁴ *Surprise and first strikes* is about taking the initiative through attacks on the adversary Centers of Gravity (CoG) early in the conflict. A *concentration of best assets* supports the first principle through the use of the most capable assets and dedicating them to targets with the most influence. The *offensive action as a component of air defense* is the continuation of the “active defense” policy, where the offensive actions in the air campaign are seen as an integrated part of *air defense*. And finally, the emphasis on *close coordination* is the emphasis on joint operations, with the PLA, the PLA Navy (PLAN), the PLAAF, and the Second Artillery integrated as a joint force under unity of command at the theater level.¹⁵

A doctrinal change occurred again in 1999, when the PLAAF revised its campaign guidance. Most of the new guidance was and is classified, but the unclassified parts of it are described as showing that the PLAAF had achieved what analysts call an “improved understanding of the operational level of war.”¹⁶ The PLAAF was tasked to prepare for four types of aerial warfare: air offensive operations, air defensive operations, air blockade operations, and airborne campaigns.

Chinese *air offensive* doctrine resembles in many ways that of the USAF in the 1980s, with a mixture of third and fourth generations air superiority fighter and multirole aircraft, aircraft dedicated for attack, and standoff jamming and escort aircraft.¹⁷ However, Chinese doctrine also differs from American doctrine in several aspects. The first is the heavy emphasis on information operations.¹⁸ The second is an emphasis on surprise, deception, and evasion.¹⁹ This is based on the fact that, unlike the USAF, the PLAAF does not assume the achievement of air supremacy after the initial strikes. The third aspect where Chinese doctrine differs from others is an emphasis on defensive operations as an integrated part of offensive operations, where the PLAAF is focusing on the inevitable counterattack.²⁰ And finally, the PLAAF emphasize destroying the enemy air force on the ground, *before* it gets airborne and becomes a much more complex threat.²¹

The PLAAF *air defensive* concepts are given more emphasis than what is normally seen for developing armed forces. This is more often than not attributed to the fact that the Chinese are planning for aerial engagements with a materially and technologically superior adversary.²² Another important aspect of the defensive doctrine is that coordination is based on preplanned procedures, as opposed to being executed dynamically in a changing, complex scenario. Units are given geographic sectors of responsibility and are kept under procedural control.²³ This is likely due to a lack in technological capabilities such as Identification Friend or Foe (IFF) systems and/or data links. However, commentators observe that with the development of new systems and through revisions of existing doctrine, the PLAAF seems to be leaving key-point defenses for a more adaptive and flexible operational approach.²⁴

The *air blockade* campaign is described as “offensive air combat implemented to cut off the enemy’s traffic as well as economic and military links with the outside world.”²⁵ The

blockade is planned to be carried out in a joint effort with ground and maritime assets, and are normally directed against maritime, ground, and aerial transportation hubs.²⁶ Scholars point out that there is a high probability of the Chinese conducting a comprehensive blockade against Taiwan in a conflict over the island.²⁷ The concept includes the entire spectrum from smaller blockades of the peripheral islands under Taiwanese control, to blockade of all transportation to and from Taiwan. An emphasis on comprehensive, joint campaigns can be seen through the including of air assets in an overarching strategy of blockade against an adversary.

Unlike many other armed forces, the airborne assault forces of the PLA belong to the air force. Based on this, an *airborne campaign* is considered a service specific campaign and not a joint campaign.²⁸ Airborne campaigns are resource-intensive and complex. They are based on a minimum of *local* air superiority, as well as a domination of the information environment. For the paratroopers to be able to conduct ground operations, they are depending on firepower preparation of the landing zone, air corridors to the landing zone being opened and kept open, and enemy air defense being suppressed. After the initial landing the paratroopers must be able to clear and secure the landing site for the reception of additional forces.²⁹

Commentators observe that even if the PLAAF have been instructed to prepare for service independent operations, the campaigns above will most likely be carried out in a joint context with PLAN and the Second Artillery in supporting roles.³⁰ Especially the Second Artillery is given a key role in a potential military engagement against Taiwan for air offensive campaigns, conducting counterattacks in air defensive campaigns, and supporting with firepower in airborne campaigns.³¹ The PLAAF have not seen significant combat since the 1950s, and are drawing extensively on the experience of other nations. However, as Roger Cliff comments, although the PLAAF has traditionally emphasized defensive operations, the United States and

Taiwan will “probably find the PLAAF to be an aggressive opponent in the event of a conflict.”³² There is a preference for achieving air superiority by attacking enemy air assets while they are on the ground or on water, and it is likely that the PLA will seek to eliminate enemy threats before missiles can be launched or aircraft can take off.³³ Although the PLAAF has been given the main responsibility for achieving air superiority, the Second Artillery will play a key, supporting role in achieving this objective.

The two Chinese colonels Qiao Liang and Wang Xiangsui wrote and published the book “Unrestricted Warfare” through the PLA Literature and Arts Publishing House in early 1999. The book is by many considered to be one of the most influential writings for military thinking for the next generation of Chinese military leaders.³⁴ The book emphasizes the need to think outside the “conventional box” when it comes to the application of military force, and the colonels describe the merging of the conventional battlespace with the technological battlespace. With the line between military and civilian technology being increasingly blurred, and the same process happening to the distinction between the professional and non-professional soldier, the colonels emphasize that “the battlespace will overlap more and more with the non-battlespace, serving also to make the line between these two entities less and less clear.”³⁵ This is one of the rationales for the concept of “unrestricted warfare,” that the colonels are promoting. And in this concept cyber and information operations are given heavy emphasis. The book describes hacking as a legitimate part of this new form of warfare, as can be seen through the latest news stories on Chinese hackers intruding into Western networks, businesses, and newspapers critical of the Communist Party and their system of government.³⁶ This “unrestricted warfare” demands that concepts of waging war are overturned and revised and that development of new concepts of war are founded on “lucid and incisive thinking.”³⁷ The Chinese do not view this as a strong point for

the American military, and they consider US armed forces to be “slaves of technology in their thinking,” who “halt their thinking at the boundary where technology has not yet reached.”³⁸ Somewhat underlined by the fact that the US armed forces have not been able to properly *define* cyber warfare, and have even less defined how to integrate this realm into waging war, the Chinese seek to take advantage of being able to think in new ways when facing an adversary that is highly reliant on the high technology of their forces. Dominating the informational environment is seen as a key ingredient for all future engagements, and the cyber domain will provide a foundation in the preparation for a future conflict over Taiwan.

The term *shashoujian* is usually translated into “assassin’s mace,” and refers to a combination of new technology and lucid and incisive thinking about how to employ that weapon. Or, as a Chinese general stated in the 1990s: “We should combine Western technology with Eastern wisdom. This is our trump card for winning a 21st century war.”³⁹ *Shashoujian* were hand maces that were hidden in the sleeves of the typical Chinese outfits of ancient times, and the maces were employed in very short time to inflict a fatal blow to the adversary.⁴⁰ Today, the term is used for those capabilities that might deter US forces from entering a military conflict through force projection, or neutralizing the intervening forces before or as they arrive in theater. It is a consistent belief that by combining the right arms with the right tactics and operational posture, China will be able to prevail in an asymmetric engagement with a militarily superior adversary, despite shortcomings of Chinese military capabilities.⁴¹ Five principles dominate Chinese overall military thinking, which includes the concept of *shashoujian*: identify and exploit weaknesses; seize initiative through surprise; employ extraordinary means; attack vulnerabilities; and ensure survivability and counter-strike ability. Although these are principles we recognize from Western military scholars, they are in this case supporting the preparation of

fighting a war against an enemy with superior capabilities, and the principles must be applied in the right manner, in the right place, and at the right time in order to accomplish success. Jason Bruzdinski points out, that *shashoujian* capabilities are those that are key to accomplish decisive and extraordinary effects when combined with specific tactics, and when put in specific operational contexts.⁴² This makes US strategists and military scholars believe that the term *shashoujian* incorporates elements that the West terms as anti-access/area-denial (A2/AD) capabilities, which will be used to deny US forces access to the operational area.

Part 3. US doctrine – Air Sea Battle

The USAF Chief of Staff and the USN Chief of Naval Operations came together in September of 2009 to sign a classified memorandum to start looking at the operational concept of Air Sea Battle.⁴³ A year and a half later, in January of 2012, the Chairman of the Joint Chiefs of Staff signed into effect version 1.0 of the Joint Operational Access Concept (JOAC). This document goes into detail on what the United States armed forces see as the most prominent aspects of “how joint forces will operate in response to emerging anti-access and area-denial security challenges.”⁴⁴ The intent with the concept is to improve the integration of land, naval, space, cyberspace forces in order to be better able to deter and defeat enemy forces that employ anti-access/area denial (A2/AD) capabilities.⁴⁵ And like Andrew Krepinevich observes, the concept seems to be founded on the ideas associated with meeting two of the foremost military challenges of the day, namely responding to a military threat posed by either Iran or China.⁴⁶ Both these nations have been investing and developing A2/AD capabilities in order to meet a powerful adversary that will attempt to project military power close to their national borders. US military leadership views the A2/AD challenge as increasingly important, and it is important to understand the basic principles of the concept before looking into a potential military engagement over Taiwan.

The JOAC distinguishes between anti-access and area denial. *Anti-access* means “those actions and capabilities, usually long-range, designed to prevent an opposing force from entering an operational area.”⁴⁷ This means to target forces that are approaching the area of operations, often primarily by air or sea, but the concept also includes space, cyber, and other forces that support the advancing forces. *Area denial* in this concept refers to “those actions and capabilities,

usually of shorter range, designed not to keep an opposing force out, but to limit its freedom of action within the operational area.”⁴⁸ This means that the effort is not given to denying adversary forces *access* to the area of operations, but rather restricting the adversary’s *freedom to operate* in accordance to his needs.

The challenge of operational access is founded on conditions that are usually already present and shape the operational environment before the forces position themselves. The foremost of these is geography.⁴⁹ There are several ways to mitigate negative aspects of geography, which usually manifest themselves through long distances from the port and airport of departure to the area of operations: advances in airpower, long-range weapons, and emphasizing cyber efforts. But the main mitigation of long distances to the fight is the forward placement of forces and bases.⁵⁰ This will take down and in some cases eliminate the time it takes to get to the fight, and the forwarding of forces might even deter aggression in the first place.⁵¹ However, the JOAC recognizes that forward basing might come with obvious political challenges. Political tension both regionally and domestically can be both prohibitive and welcoming for forwarding forces into the area of contention.

The US military recognizes three main trends that will pose challenges to getting access to vital points and areas for US forces: the improvement and proliferation of weapons systems capable of denying access, the change in US overseas defense posture, and the emergence of space and cyberspace as increasingly important domains in preparation for and during battle.⁵² The *improvement in weapons technologies and the proliferation of these* can be seen through ballistic and cruise missiles capable of striking outside of 1,000 nautical miles of the firing position; reconnaissance and surveillance with new aircraft, satellites, and radars with extreme ranges; kinetic and non-kinetic antisatellite weaponry; and new and more silent than ever

submarines on patrol to ensure denied access to the area of operations. The *change in US defense posture* is a trend that is founded on three factors. The first is a general decrease in support worldwide for US forces and bases on foreign soil. The second is that in a multipolar world with an ever changing threat scenario, the cost of projecting power through forward basing against every perceivable threat is prohibitive. Lastly, the increased importance of terrorist organizations and the decrease in costs for high-tech weaponry can make forward basing an invitation for political and military friction and tension. The third trend is *the emergence of space and cyberspace as increasingly important domains* in winning the battles of the future. There is a well-founded understanding in the US armed forces for the importance of space and the support that space gives the conventional warfighter through elements such as intelligence and communications support. There is also a growing understanding of the importance of cyberspace in the current and future battlespace. This point is where the Chinese and the American doctrine meet. And like the Chinese authors of “Unrestricted Warfare” emphasized thinking outside-the-box and pointed to include cyber and information operations as paramount, integrated parts of modern warfare, the American doctrine is increasingly emphasizing the same. The JOAC even goes so far as to say that the need to establish domain superiority over cyberspace is a standing requirement independent of conflicts and threat scenario.⁵³

What US doctrine in regard to the A2/AD challenge underlines is the need for *cross-domain synergy*. This is where the joint force establishes an “integration across domains without regard to what Service provides the action or capability.”⁵⁴ This synergy, coupled with the principles laid out in the JOAC to attain area access, will lead the joint force to gain this access in the face of armed opposition.⁵⁵ The principles for gaining access for the joint force are to *conduct operations with regard to the objective of the broader mission; to prepare the*

operational area through things such as multinational exercises, Foreign Internal Defense (FID) operations, and negotiations; to *consider a variety of basing options* to include forward staging of forces (although this might pose an increased risk to these forces), sea-basing, and emphasizing capabilities independent of basing (cyber, space, information operations); *seizing the initiative* by deploying on multiple, independent lines of operations; to *exploit advantages in one or more domains* in order to disrupt enemy A2/AD capabilities; to *disrupt enemy ISR efforts* while protecting friendly efforts; to create *local domain superiority* and maintain this as required in order to accomplish the mission; to *manoeuvre directly against enemy key operational capabilities from strategic distance*; to *attack enemy A2/AD capabilities in depth* rather than rolling back those defenses from the perimeter; to *maximize surprise* through deception, strength, and ambiguity; and finally, to *attack enemy space and cyber assets* while protecting your own.⁵⁶ These generic principles are sought to help the warfighter in gaining access in a non-permissive environment, and, when applied in conjunction with the joint functions of the armed forces, are aiming to mitigate the evolving challenge to projecting US military force around the globe.

Some of the risks associated with the concept are that the joint force will be too reliant on deep, precise strikes at enemy A2/AD capabilities from afar. Both providing targeting intelligence and calculating advanced weaponeering is still, and when assessing A2/AD cases especially, considered a great challenge at long distances.⁵⁷ There is also a concern that the concept will not be logistically sustainable. Supporting fighting forces at significant distances from the home operating base will pose difficult challenges, where the only mitigation tool might be to keep the force as logistically self-sustainable as possible.⁵⁸ The concept might also be economically prohibitive. The JOAC is resource-intensive, and requires broad and frequent exercises, equipment interdependence, and a robust command and control system. In addition to

this there is a concern that the JOAC might cost more in casualty levels than has been seen in decades.⁵⁹ Air Sea battle is quite simply risky business, especially when facing a developed and prepared adversary that is actively denying access and the freedom of movement of forward operating forces. The following section of the essay will look at how a military engagement with China over Taiwan might play out, and will seek to touch the core of the discussion of the A2/AD challenge surrounding the island of Taiwan.

Part 4. An Air Sea Battle over Taiwan

The Third Taiwan Strait Crisis occurred between the summer of 1995 and the spring of 1996. On 18 July 1995 the authorities in Beijing announced that they would perform missile tests off the coast of Taiwan. Over the following three days six DF-15 missiles were launched from the Chinese mainland.⁶⁰ During the next month the PLA Navy (PLAN) and PLA Air Force (PLAAF) conducted ten days of live-fire tests off the Fujian coast, the province opposite Taiwan on the Chinese mainland. The tests were carried out after a five-day advance warning.⁶¹ Over the next months the PLA, PLAN, and PLAAF, conducted joint exercises south of Taiwan, and in the beginning of March of 1996 the Chinese armed forces commenced live missile tests with targets sailing a little less than fifty miles from Taiwan's main shipping ports. The tests and operations included DF-15 missiles fired at seaborne targets, war gaming, amphibious landings and aerial bombings, with a total of 40 naval vessels, 260 aircraft and approximately 150,000 personnel involved.⁶² The United States responded by sending two aircraft carrier battle groups close to the Taiwan Straits in a response to the Chinese military intimidation of the American ally.⁶³

The People's Republic of China (PRC) are claiming the Republic of China (ROC), known as Taiwan, and her surrounding islands as part of Chinese sovereignty, and refuse to acknowledge Taiwan as a sovereign state. Explicitly, the PRC government has made it clear that they are prepared to employ "non-peaceful means" in the case of any formal declaration of Taiwanese independence, or if the PRC deems that "possibilities for a peaceful reunification" have been "completely exhausted."⁶⁴ According to Andrew Scobell, the military exercises were specifically meant to protest the visit of Taiwan's president to the United States in June of 1995. But in more general terms, the aim was a show of force in order to deter the Taiwanese from

pursuing independence from mainland China.⁶⁵ The message was meant for both Taipei and Washington: China is deadly serious about using force if necessary to reunite China and Taiwan, and the United States should think twice about intervening. Scholars agree that one should expect Beijing, should they choose the military option to solve the Taiwan question, to make a heavy effort to deter, delay, and deny the intervention of US forces from intervening into the conflict.⁶⁶ This takes us to the point of deterrence.

Deterrence

A strategic question arises, of how US deterrence measures are perceived in Beijing. The question is a rather classic one, as it is based on the *perceived* deterrence, i.e. *assumptions* of enemy will and capabilities. What does China have to do to deter the USA, the most militarily powerful nation in the world both in capabilities alone but also in the ability to project military power across the globe, from engaging in a conflict in the East China Sea? For militarily weaker nations deterrence is not about increasing their military capabilities to such a level that adversaries will be completely defeated if they attack. Rather, deterrence is about raising the cost of the conflict to such a level that the adversary is not willing to pay the price of his own attack or the ensuing conflict. In the case of China and the USA, the Chinese have to raise the cost of US involvement in the conflict to a level that is unacceptable to the Americans, whether it is prepositioning of forces or responding to a Chinese attack. Similarly, the Taiwanese and the Americans must make the scenario of claiming Taiwan through military means so costly that Beijing will find the military solution unacceptable.

Several theorists have pointed out a spin-off dilemma to the question of deterrence in the Taiwan Strait: There is a possibility that Beijing, acknowledging the *de facto* need for deterrence mentioned above, will misjudge the level of deterrence needed, and assume that the Americans have been deterred from entering a conflict in South East Asia because of the Chinese deterrence and anti-access measures put in place. Based on Chinese assumptions that the Americans have been deterred, the Chinese might start a military conflict to ensure control over territory and resources in the region, “assured” that American military power is out of the equation. However, if this assumption is wrong, and the Americans are not deterred by the Chinese anti-access measures, then Beijing might inadvertently pull the Americans into a costly and bloody military conflict.⁶⁷ A consequence of this problem, as pointed out by theorists on either side of the Pacific, is that both sides need to be *open* about their positions and deterrence measures.⁶⁸ As all the resources cited in this essay are unclassified, this openness has to a large degree come to fruition, and the following discussion goes into the potential of the already deployed assets across the Taiwan strait, and then to answer the research question of this essay: the potential of forwarding US forces in Taiwan.

Cyber and information warfare

The Chinese are putting an increased emphasis on the importance of information operations (IO) and cyber warfare. The book “Unrestricted Warfare” discussed above points out that the use of IO and cyber measures as integrated parts of an offensive will be key in the preparation of the battlefield. The book indicates a sense in the Chinese military leadership of being in front of the United States when it comes to the ability to incorporate these aspects into

thinking about warfare. According to the Chinese, Americans seem to be “slaves of technology,” and limited to incorporating new capabilities to the specific Services, and not as integral parts of applying military force. The Chinese are using IO and cyber for everything they are worth, and Taiwan and the United States should expect significant cyber and information attacks on friendly capabilities leading up to the initial military-kinetic attack. A computer network attack is by the Chinese considered a preemptive weapon that should be used for “gaining mastery before the enemy has struck.”⁶⁹ The PLA will attack Taiwanese and American C2 systems, in addition to focusing on logistics network systems in order to disrupt the forward movement and subsequent sustainment of adversary forces.⁷⁰ Commentators agree that Taiwan is a highly information-dependent society, with a “relatively low level of computer of information security.”⁷¹ A report released in 2009 stated that the PLA was actively developing capabilities for computer network operations (CNO) and was creating “the strategic guidance, tools and trained personnel necessary to employ it in support of traditional warfighting disciplines.”⁷² These activities have continued to the present, and are likely to continue in the future. The Chinese are giving heavy emphasis to preparing the battlefield through cyber and information measures, maybe even hoping to avoid a kinetic engagement altogether. But for planning purposes, the cyber operations will be followed by what the PLA are hoping to be a decisive first strike.

The initial strike and the fight for air superiority

Building on the concepts and emphasis on surprise, the Chinese are stressing that the first engagement against Taiwan will be decisive. And although the Taiwanese has a potent and capable air force, they will for political reasons not fire the first shot.⁷³ With the Chinese

acknowledgement of having the initiative, they are incorporating this into the emerging doctrine by the emphasis and utilization of air assets to seize the initiative and get control of the air as the single most important aspect of the opening stages of a conflict. It is clear, as mentioned above, that the PLA studied and took seriously the lessons that could be derived from the Persian Gulf War of 1990-1991, and they have been emphasizing the importance of air power and air campaign theory ever since.⁷⁴ The focus on air superiority is translated into action through the incremental, pragmatic approach that is discussed above – an emphasis on surprise attacks to take out key adversary aerial capabilities, however assuming that air superiority will be attained over time, not during the initial strike. The offensive posture is therefore followed by an integrated defensive posture.

The first line of defense for the Taiwanese would most likely be against a massive missile attack, followed by an aerial campaign aimed at achieving air superiority over Taiwan. It is generally considered that one of the greatest weaknesses of Taiwan's air power is her vulnerability to missile attacks, with simultaneous aerial bombardment from manned aircraft.⁷⁵ The PLA has now an impressive inventory of short-, medium-, and long range ballistic missiles, and have been focusing on the DF-15 and DF-11 missiles. Both systems have the range to reach all of Taiwan, and pose a significant strategic threat to the island.⁷⁶ Both missiles can be launched with little preparation from mobile launchers, and can deliver warheads on targets on Taiwan within 6-8 minutes of launch.⁷⁷ Experts agree that relatively few would be needed to inflict significant damage to the ROC Air Force's (ROCAF) ability to respond.⁷⁸ However, the PLA has currently deployed approximately 1,300 short-range ballistic missiles (SRBM) and cruise missiles in areas opposite Taiwan, and of the at least 5 operational SRBM brigades that the Second Artillery employ, all are positioned across the Taiwanese Strait.⁷⁹ These missiles

constitute a significant threat not only to the island of Taiwan, but also to approaching allied forces that will join the area of operations after the initiation of hostilities. They form a significant part of the Chinese anti-access threat for external forces that these will have to neutralize or otherwise overcome.

The ROCAF has roughly 400 combat aircraft in service, and although technologically at the level of newer aircraft, several of the Taiwanese aircraft are seeing increasing maintenance challenges.⁸⁰ The PLAAF boasts around 2,300 operational combat aircraft, of which approximately 490 aircraft are able to conduct combat operations over Taiwan without refueling.⁸¹ A hypothetical air-to-air engagement over air superiority should not be distilled down to a numbers game, but the numbers and aircraft types help indicate how a battle might turn out. RAND estimated in 2009 that the PLAAF will increase their inventory of 4th generation combat aircraft with between 90 and 300 percent.⁸² And considering the capabilities of the Chinese Su-27 and Su-30, more and more commentators agree that a combat engagement over air superiority in the Taiwan Strait will go in favor of the PLAAF.⁸³ It is becoming increasingly clear, that if ROCAF is to gain air superiority they must do so by attacking Chinese air capabilities while they are on the ground. But then again, the Taiwanese will not fire the first shot.

Following the same logic, a Chinese initial strike will focus on taking out key ROCAF capabilities while these are on the ground. According to the analysis of Chih-Heng Yang and Tzu-Yun Su, both Taiwanese military and political scholars, China would have several tactical options to utilize in order to paralyze Taiwan's air defense capability. Among these are to "attack Taiwan's air defense command system and use soft and hard kill means to destroy Taiwan's air defense's surveillance and C2 systems," to "damage and suppress Taiwan's airfields," and to

“degrade Taiwan’s ‘situational awareness’ capability” by targeting air defense units and their radars.⁸⁴ With the Taiwanese fighters not able to take off it is a question of time when the Chinese have achieved complete control in the air over Taiwan, opening for easier approaches to destroy Taiwan’s entire air defense. And with the focus on operational tempo that the Chinese are giving offensive operations, the sequential attack on the air defense is rendered a relatively high probability of success.⁸⁵

Taiwan utilizes a layered SAM coverage for the protection of population centers, key leadership installations, national infrastructure, and military facilities.⁸⁶ The air defense network consists of 22 SAM sites, consisting of Tien Kung, PAC-2 Patriot, I-Hawk, and M-48 Chaparral batteries, among others.⁸⁷ The systems themselves might be considered somewhat sufficient for a minor air defense, but the sheer number of the missiles and aircraft that would attack in the event of a military engagement initiated from the Chinese mainland is likely to be too much to handle for these batteries.

The ensuing Chinese air defense campaign will most likely be conducted by an increasing number of modern PLA aircraft and SAMs, assisted by long-range early warning radars and secure communications links, together with hardening and camouflage measures that are already in place.⁸⁸ These are aspects that will make an air campaign challenging for American and Taiwanese forces. The Chinese SAM defense has been built around the S-300, a Chinese version of the SA-10 Grumble, by many regarded as one of the world’s most effective all-altitude regional air defense systems, comparable to the American MIM-104 Patriot system.⁸⁹ The S-300s placed on the Chinese mainland will pose a significant threat to Taiwanese and allied partners attempting to neutralize PLAAF capabilities over or on the Chinese mainland.

It is generally regarded that the key to Taiwan's national security lies in her ability to answer "any PRC attempt at military coercion," as a minimum until friendly forces arrive and are able to join the fight.⁹⁰ If the ROCAF is able to absorb the initial strike, and then focus on engaging PLA forces both ship-borne and in the air, analysts Chih-Heng Yang and Tzu-Yun Su point out that the subsequent "fog of war" is going to give a serious blow to the PLA chances of success.⁹¹ This ability to absorb the initial strike then comes down to the inherent capabilities and posture of the Taiwanese defensive forces, and their ability to hold on until allied help arrives.

In order to invade and occupy the island of Taiwan the PLA have to conduct an amphibious operation. They must establish one or more beachheads, resupply and reinforce that point, break out from it, defeat the defending forces, and then establish control of the island.⁹² This amphibious operation will most likely be executed with a mixture of naval vessels, where the amphibious vessels are hidden in between surface combatants, auxiliary vessels, and decoy ships rigged to look like assault ships for the sensors searching for them.⁹³ With local PLAAF air superiority established, at least in the *corridor of transit* from the Chinese mainland to Taiwan, the Taiwanese ISR assets and sensors might have trouble identifying the amphibious landing ships approaching, if the sensors on land and the defending Taiwanese naval assets haven't already been neutralized. A RAND study from 2009 emphasizes that the achievement of local air superiority would be the greatest threat for the defending forces with regard to a landing operation.⁹⁴ With heavy support from the air this is easy to comprehend. And the initial PLAAF strikes *will* most likely, in addition to focusing on ROC C2 systems and air force infrastructure as mentioned earlier, focus on capabilities that will complicate an amphibious landing, such as coastal defense systems. The RAND study mentioned above indicates three lessons learned from the Falklands War of 1982 with regards to amphibious operations: that in amphibious operations

there is no place to hide; that modern weapons are deadly to warships; and that distance matters.⁹⁵ The two first of these are to the detriment of the attacker, but what was emphatically demonstrated in 1982 was the disadvantage of a militarily superior force (United Kingdom) when put up against an inferior foe (Argentina) *at distance*. The complexity of logistics and the distance and time consumed by the advancing force made the amphibious operation into a clash between two sides *on par* with each other. As a consequence, it seems necessary to point to the fact that the very short distance between mainland China and the island of Taiwan speaks in favor of the attacking amphibious force – that is if the forces on the island cannot meet the attacker with sufficient fire power and numerical strength.

Denying access to US forces

The Chinese want to and will most likely attempt to take out US staging areas, both ship-borne through A2/AD measures, and shore-based through the use of SSMs and cruise missiles. The Americans use and need Kadena AFB in Japan, Anderson AFB on Guam, and other friendly land based staging areas in order to fly air superiority assets into the area of conflict. However, some analysts claim that the political pressure to stay passive and neutral in a potential conflict, not to mention the threat of missiles strikes from China, can jeopardize even these bases as staging areas for US forces.⁹⁶ American forces also need access to waters inside what the Chinese call “the Second Island chain” in order to stage carrier based fighter and bomber missions. The Second Island chain stretches from Tokyo straight south, to include the Northern Mariana Islands, Guam, Palau, and down to East Indonesia. The access to these waters is one of the main factors of the American A2/AD challenge in a conflict with China. However, neither

the USAF nor the PLAAF do assert that achieving absolute air superiority in all stages of combat and across the entire area of conflict is necessary.⁹⁷ Instead, both sides aim to achieve enough air superiority in order to achieve tactical and campaign objectives.⁹⁸ But even with this pragmatic approach to incremental steps toward reaching one's objectives, to gain air superiority after it has been lost might be a challenge that can turn out too costly in both lives and equipment. In the event that the ROCAF loses the fight over air superiority, and in the logic of anti-access, the achievement of air superiority over Taiwan by PLAAF will be the fundamental first step in the annexation of Taiwan as a part of the territory of Chinese proper. Having air superiority over Taiwan will give PLAAF further freedom of movement to deny allies of Taiwan access to the fight, and the Chinese will be able to meet an opposing force both by sea and air, without the prospect of ROCAF capabilities intervening in their efforts. Being able then to challenge PLAAF air superiority for the time it takes for allies to join the fight, will be paramount to disrupt this cornerstone of Chinese anti-access ability.

Taiwan and the United States must prepare for information and cyber operations with a significant potential for neutralizing or disrupting the deployment of friendly assets and capabilities leading up to the initial attack.⁹⁹ The Chinese have already pointed to the American vulnerability of placing the unclassified NIPRNET on a civilian backbone and unclassified computer networks, bringing for example the Time-phased Force Deployment Data (TPFDD) up front and center as a vulnerable logistics cyber target. In preparation for a kinetic engagement over Taiwan, the PLA will actively use the cyber domain to disrupt and deny access to the area of operations for the Americans.

Another essential part of the Chinese anti-access measures are their submarines. The PLA Navy (PLAN) has mostly diesel-electric submarines, which sail far slower than a potentially

attacking carrier strike group. It is likely that these will stay at the perimeters of the Second Island chain in order to ambush approaching combat vessels allied to Taiwan.¹⁰⁰ The PLAN has in its inventory several Russian imported Kilo-class submarines, which are very quiet and hard to find in open water operations. These employ the highly capable SS-N-27B Sizzler, which is specifically constructed to defeat the American Aegis anti-air warfare system, penetrate a task force's defenses, and then strike high-value targets – such as aircraft carriers.¹⁰¹ In addition, the PLA have developed the Type 093 nuclear attack submarine (SSN) which is considered to be as quiet as the American Los Angeles-class SSN.¹⁰²

In support of the submarines out on perimeter patrol will be the Anti-ship Ballistic Missiles (ASBM), of which the DF-21B is the most notable.¹⁰³ With a range of over 1,100 nautical miles they are based on mobile-launchers, enabling “shoot-and-scoot” tactics to improve the system's survivability.¹⁰⁴ ASBMs are by many regarded as the needed capability for technologically limited developing countries in order to face qualitatively superior adversaries by asymmetric means, when the superior nation seeks access to the inferior nation's waters.¹⁰⁵ Some experts claim that the technology needed for a credible and complete weapons system is not in place.¹⁰⁶ But when it is, the DF-21 will be able to hold at risk ships that are positioned far beyond Taiwan and into the Pacific Ocean. Both the ASBMs and the submarines would be essential *shashoujian* weapons for the Chinese in their efforts to deny Taiwanese allies access to waters closer to the Chinese mainland.

The targeting of adversary assets approaching from beyond the horizon has been a challenge ever since the invention of radar. But maritime targeting and surveillance systems have been developed with new and improved technology all over the world. The Chinese themselves have developed and deployed over-the-horizon backscatter (OTH-B) radars, land-based over-the-

horizon surface wave (OTH-SW) radars, electro-optical satellites, and radar satellites in their efforts to better enhance their maritime situational awareness beyond the horizon.¹⁰⁷ With known ranges for OTH-B systems of 1,600 nautical miles or more, these sensors, coupled with very capable ASBM systems, will pose a significant threat against aircraft carriers seeking to operate within the Second Island chain.¹⁰⁸

Another *shashoujian* weapon is the Anti-Satellite (ASAT) weapons that the Chinese are able to employ. First demonstrated in 2010 when the PLA shot to pieces one of their own weather satellites in orbit, the Chinese have demonstrated that they command weapons to neutralize other satellites in space. Aside from this kinetic ASAT capability, the Chinese have also employed ground based laser ASAT weapons, which would be able to “dazzle” enemy satellites if they desire to do so.¹⁰⁹

With these systems in place, and if air superiority and local control of Taiwan is achieved before Taiwan’s allies can properly respond, then the PLA has managed to increase the territory from which to execute anti-access/area denial. The borders will have moved from the Chinese mainland to include the island of Taiwan. How then, can this best be avoided in the first place?

The Unsinkable Aircraft Carrier

When General Douglas MacArthur described Taiwan as an “unsinkable aircraft carrier” he was advocating an offensive posture towards the containment of communism.¹¹⁰ He looked at the island as one that “dominates the center point of China’s convex seaboard,” which enables an outside power to “‘radiate’ power along China’s coastal periphery.”¹¹¹ The island represented a significant potential for force projection, taking US forces within 120 miles of the Chinese

mainland, and making it logistically less complex to stage anti-communist operations against Beijing.¹¹² The Cold War is over, and so is the life of the type of expansionist communism that made the United States pursue an active containment policy towards it. However, in the case of the defense of Taiwan, more and more commentators point to the fact that a weakened American response to Chinese hostilities could cause the collapse of Taiwan's military resistance, and as a consequence the capitulation of Taipei might occur before the United States are able to project military power to the area.¹¹³ But the unsinkable aircraft carrier still represents a significant potential for meeting the increasing challenge of anti-access.

Observers point to the two-fold objective with the Chinese military buildup when assessing it against the capabilities of the United States: First, they want a military that is capable to deter the United States from intervening in a conflict over Taiwan, and second, if deterrence fails, they want to be able to delay the arrival of US forces or reduce their effectiveness.¹¹⁴ This essay suggests that it is possible to turn the A2/AD question on its head, and in many ways meet the Chinese A2/AD measures aimed at the United States *before* the hostilities begin. As the situation is today, the Chinese are staging A2/AD measures within the Second Island chain, and if they reach their potential military objectives of seizing the island of Taiwan itself, the A2/AD measures in place will be even further enhanced.¹¹⁵ Considering the different measures already presented in this essay coupled with a doctrine oriented on the offensive, the A2/AD measures put in place by the Chinese might deny US participation in a conflict over Taiwan altogether. In spite of this a senior Pentagon official stated in late 2011 when discussing the Air Sea Battle concept, that "it is a very forward-deployed, assertive strategy that says we will not sit back and be punished. (...) We will initiate."¹¹⁶ This seems to be the appropriate attitude when facing a

challenge of these proportions. However, as the official stated, the United States must get up *in front* of the problem.

When the Department of Defense (DoD) in the 1980s outlined their basic framework for military projection of power, the framework was based on four major assumptions: There would be sufficient basing close to theater available to support air, naval, and logistics operations; aircraft carriers would be able to defend themselves (although at a certain degree of risk); US fighter aircraft would be able to quickly achieve air superiority; and US bases close to theater would enjoy “near-sanctuary status from attack.”¹¹⁷ Assessing the potential theater of conflict over Taiwan, all of these assumptions are made invalid, or certainly degraded. The United States have bases relatively close to Taiwan (Okinawa and Guam), but these are too distant for their capabilities to play a significant role in the opening stages of the conflict. The US aircraft carriers are able to defend themselves to a certain degree, but will meet severe opposition in the developing ASCM capabilities and possible swarming attacks from these. US fighter aircraft will not be able to achieve air superiority quickly after the initial and ensuing PLAAF attacks on Taiwan, and on the contrary the USAF/USN will have to attempt to *take back* control of the air over Taiwan after they arrive in the area of operations. And finally, the bases that are the closest to Taiwan have not been hardened nor set up with anti-ballistic missile defenses, and are thus not immune from a preemptive attack from the PLA in their preparation of an invasion of Taiwan.

Let’s consider then for a minute the opposite situation than the one where the PLA is able to deny access to Taiwan’s allies. Let’s consider that Taiwan is *a part of* American forward positioning, and that the measures that the PLA employ are met with similar capabilities staged from Taiwan. Forward positioning might circumvent the question of deterrence altogether, and certainly bypass the question of delaying or disrupting American transit to the area – because the

US capabilities are *already there*. In addition to the Taiwanese measures already in place, the United States will honor her commitment to Taipei by forwarding troops and capabilities to the island. Several capabilities fundamental to Taiwanese defense would be enhanced.

First would be the improvement of the missile air defense. Ballistic and cruise missiles capable of striking mobile and fixed targets with improved precision is by commentators considered the most significant threat against Taiwan and American bases in the area.¹¹⁸ Although not able to provide total immunity from Chinese attacks, an upgrade from PAC-2 to PAC-3 would certainly reduce the damage that has to be absorbed by Taiwan.¹¹⁹ A similar improvement would be the ongoing efforts to develop early warning systems similar to the Aegis radar. Based on US intentions to assist in the event of an attack, this joint missile and air defense has to some degree, and should definitely in the future, be able to conduct operations in concert with US armed capabilities.¹²⁰ The shortcut to this would be to preposition US air defense forces on the island and integrate them with existing and developing capabilities. The United States chose this option in the late 1950s by deploying the 2nd Missile Battalion-71st Artillery to Taiwan with the new Nike-Hercules missile batteries.¹²¹

The idea of an active defense against missiles has been disregarded by some because the necessary technology does not seem to be available.¹²² But as Barry Watts notes, speed-of-light, line-of-sight laser weapons will soon begin to “shift the balance between offense and defense increasingly in favor of the latter.”¹²³ Unless weather or other atmospheric factors come too heavily into play, laser weapons might in the near future provide a relatively solid defense against guided munitions. One of the technologies that could be able to meet the challenge of a massive missile attack is the *Sky Guard system*. Developed by Northrop Grumman, this is a high power chemical laser system that will be used to intercept man-portable anti-aircraft missiles,

and defend against rocket, artillery, and mortar (RAM) threats.¹²⁴ Further development of this system will enable it to defend against short-range ballistic and cruise missiles, and Northrop Grumman expects a single unit of the system to be able to defend a concentration of deployed forces, single military installations, or specific civilian population areas and industrial areas.¹²⁵ Deploying these kinds of systems when they are fully developed will significantly improve the air defense of Taiwan. One tactic that is being discussed in the setting of meeting a superior adversary with superior technology is “saturation attacks” or “swarming attacks.”¹²⁶ This is when the side that is inferior in military technology attempts to overwhelm its adversary’s radar and missile systems by the sheer quantity of approaching units or weapons. A laser system like the one discussed will be able to meet the threat of saturation missile attacks with low cost, high energy bursts. A traditional missile defense system will be significantly more limited by the amounts of counter-missiles that must be fired in order to prevent adversary missile impact on friendly bases, units, and installations. Placing these laser defense weapons on bases and on ships would improve the counter-swarming and counter-ASCM defense capabilities, and significantly reduce the “cost-per-shot,” not to mention the total cost of the system, compared to meeting the challenge with traditional anti-missile defense systems.¹²⁷

Prepositioning air superiority aircraft will make the balance currently in the PLAAF’s favor become more even. Forwarding squadrons of F-22 air superiority combat aircraft, training these with indigenous fighters, and making the added capability an integrated part of the air defense of the island can make the PLAAF think twice about entering a quest for air superiority over Taiwan. The F-22 is by many assessed to be able to handle twice as many tasks as a conventional fighter aircraft, and will be a significant contribution to the inferior numbers game towards the PLAAF.¹²⁸ But in spite of advanced technology and capabilities, the F-22 and later

the F-35 are highly dependent on “close-in bases” and aircraft carriers – without which the aircraft will be denied large areas of the operational battlespace.¹²⁹ The question of distance should thus be met by positioning these aircraft on Taiwan itself.

These aircraft will not be immune against a massive missile attack, and should be placed in facilities such as, or similar to, the underground Chia-shan airbase. The airbase has underground power generators, a microwave landing system for multiple, parallel landings and takeoffs, and months’ supply of food, fuel and military equipment.¹³⁰ The strategy would further be to harden shelters and supply elements, cover and protect the aircraft from the initial missile attack, and then launch air superiority aircraft that can meet the wave of ensuing PLAAF aircraft. As Gunzinger and Dougherty observe, the further hardening of shelters, bases, and supply lines could decrease the adversary’s confidence in achieving a “knockout blow.”¹³¹ The air superiority aircraft countering the Chinese attack will thus be *staged from Taiwan*, and not based out of distant Okinawa or Guam. There could also be prepositioned other types of aircraft with the mission of attacking adversary airbases and air defenses after the initial strike on Taiwan, and to attack an advancing naval and amphibious force. The prepositioning of aircraft to Taiwan would increase the defenses markedly, and make the achievement of air superiority over Taiwan by an adversary significantly harder.

Supporting the Taiwanese with submarines to patrol the waters surrounding and in the Taiwan Strait, and deploying cruisers and frigates to the island will be a measure that beats the PLA to the punch when it comes to denying access to the operational area. Taiwan already has one of the world’s major navies, with 118,000 tons of operational assets – a fact that sets them at number 8 in the world.¹³² Mostly up to date, naval experts assert that the Taiwanese Navy is fully worthy of its world ranking in tonnage, and should be considered a considerable naval power.¹³³

However, 99% of all trade to and from the island travel by keel, and this makes Taiwan vulnerable to a potential naval blockade in spite of her naval credentials.¹³⁴ US submarines and naval vessels would bring additional anti-submarine warfare (ASW) expertise, and provide a significant boost to the firing power against PRC naval units, especially with the planned increases to cruise missile capability for vessels such as the Virginia-class SSN.¹³⁵ Also, American cruisers with Aegis radars will improve the integrated situational awareness for the coalition if they are *already present* when hostilities kick off. As the former CNO Admiral Jay Johnson stated when commenting on future anti-access challenges: “Without the ability to assert such area control, any sustained forward operations, (...) quickly could become very costly in American lives and very risky—if not impossible.”¹³⁶ Therefore, the US Navy should additionally enhance their presence staged out of Taiwan with the developing Unmanned Carrier-Launched Airborne Surveillance and Strike (UNCLASS) aircraft, which is intended to “extend the persistence and reach of the aircraft carrier airwings” in a high-threat environment.¹³⁷ Together with the already planned MQ-4B Broad Area Maritime Surveillance (BAMS) these aircraft will provide consistent ISR and a situational awareness in the area of operations that is needed. These forwarded naval assets will also create a credible barrier against an amphibious operation attempted by the PLA. With Aegis radars challenging the achievement of PLAAF air superiority, which would assist the PLA heavily in making an amphibious operation feasible, US forwarded naval vessels would challenge the attacking force in other, additional ways. The laying of mines would force the PLAN to spend time clearing such obstacles, ship borne anti-ship missiles would be a credible threat to the advancing force, and US submarines would create an area denial problem for the amphibious forces. The naval force should be supported by air-to-surface aircraft carrying Joint Air-to-Surface Standoff Missiles (JASSMs), creating the long-

range threat to the amphibious forces.¹³⁸ Naval vessels, both Taiwanese and those of the US Navy, should be equipped with ASBMs for the mid-range section of the potential transit. The Taiwanese coastline should be fortified with coastal Hellfire missiles capable of neutralizing approaching landing craft, thus creating a layered naval, amphibious defense of the island.

These efforts would be turning the A2/AD challenge one hundred and eighty degrees, and securing access to the area *before* the hostilities begin. The prepositioning of forces might even be a *deterrent* to the PLA from attacking in the first place. It would be politically naïve to disregard the potential of the Chinese reacting to the force build-up on the island of Taiwan through any of their national instruments of power. Some argue that based on the US Navy's dominance in the maritime domain the United States are already able to ensure security in the Western Pacific, and should therefore not build up any force posture in the region.¹³⁹ However, the A2/AD capabilities that are being fielded opposite Taiwan in a potential preparation for a military engagement is making the participation of US forces in such a conflict increasingly complex. If the prepositioning of US forces is supported by a clear message and reiteration of the explicit American One-China policy through a whole of government approach, the force buildup can be the clear statement that the United States wishes to give, namely that China will not be united through aggression and military force.¹⁴⁰

Part 6. Conclusion

Yes – the United States should use Taiwan as a land based focal point in Air Sea Battle. The development of Chinese doctrine and *shashoujian* weapons, met by the answer from the United States through the concept of Air Sea Battle shows that the projection of the US capabilities will most likely be severely delayed, if not outright denied, in their attempt to access the battlefield from afar.

Chinese military doctrine has developed from a defensive focus from potential invasions by powerful adversaries, to an emphasis on a more proactive posture where the PLA is seeking to win the fight early. The PLAAF has learned the importance of air superiority, and PLAAF doctrine has shifted to an offensive posture with important support from the Second Artillery. The concept of *shashoujian* shows that the A2/AD capabilities being developed by the Chinese are founded on an acknowledgement of being technologically inferior, with the focus on select A2/AD measures to win the fight early and preemptively.

The US doctrine of Air Sea Battle focuses on meeting these A2/AD challenges. The JOAC emphasizes the importance of *cross-domain synergy*, which will be supported through the application of A2/AD principles for the joint force. These are principles such as a focus on a variety of basing options, exploiting advantages in one or more domains in order to disrupt enemy A2/AD capabilities, creating local domain superiority and maintain this as required, and maneuvering directly against enemy key operational capabilities from strategic distance.

The PLA has staged several *shashoujian* weapons, and are developing more. Anti-ship Ballistic Missiles (ASBM) supported by Over-the-Horizon – Backscatter (OTH-B) radars are posing a significant threat to forces approaching the theater of operations. Chinese naval vessels

and submarines that are increasingly quiet on perimeter patrol will threaten to track and ambush adversary vessels at a distance. Proven ASAT capabilities will play a major role in a potential conflict, and the Chinese are emphasizing the importance of cyber and information operations to a larger degree than is common in US and Western application of military power.

The United States should enhance the defense of Taiwan by deploying air defense capabilities such as the PAC-3 to the island and have these integrated with Taiwanese capabilities. New technologies such as speed-of-light, line-of-sight laser weapons should be pursued in order to meet the challenge of swarming missile attacks conducted by the adversary. Air superiority fighter aircraft should be prepositioned and integrated into the Taiwanese air defense, and placed in hardened and if possible underground facilities for improved protection. Staging these aircraft from Okinawa and Guam will most likely be too late in the fight for air superiority over Taiwan. US Navy submarines should be forwarded in order to challenge the maritime area-denial capabilities set to sea by the PLA. Cruisers and frigates from the USN with Aegis capabilities already in place will enhance both the maritime and aerial situational awareness, and provide an enhanced ASW capability that will challenge Chinese anti-access measures. These vessels with their sensor capabilities and fire power, and supported by anti-surface weapons fired by naval aircraft will create a credible threat – a layered coastal defense – to a potential amphibious attack.

Although a complex political and diplomatic task, this forwarding of forces will give a credible emphasis of the US stands that China will not be united through military coercion. The force posturing must be followed by a whole-of-government approach where a comprehensive information and diplomatic campaign points to the fact that the United States is both in support of a One-China Policy, and a *peaceful* solution to the question of a united China.

-
- ¹ Andrew F. Krepinevich, *Why AirSea Battle?* (Washington, D.C.: Center for Strategic and Budgetary Assessment (CSBA), 2010), 5-7.
- ² “Admiral Willard Discusses China, North Korea.” *Eagle World News*, 21 October 2009.
- ³ Krepinevich, *Why AirSea Battle?*, 9-10.
- ⁴ US Congress. “Taiwan Relations Act (TRA).” Public Law 96-8 96th Congress, 1 January 1979.
- ⁵ Robert D. Kaplan, *Monsoon – The Indian Ocean and the Future of American Power*. (New York, NY: Random House, 2011), 8.
- ⁶ People’s Republic of China. “Anti-Secession Law.” Third Session of the Tenth National People’s Congress, March 14, 2005.
- ⁷ Roger Cliff et al., *Shaking the Heavens and Splitting the Earth – Chinese Air Force Employment Concepts in the 21st Century*. (Santa Monica, CA: RAND, 2011), 33.
- ⁸ Cliff et al., *Shaking the Heavens and Splitting the Earth*, 34.
- ⁹ Ibid.
- ¹⁰ Ibid.
- ¹¹ Ibid., 35.
- ¹² Ibid.
- ¹³ Ibid., 33.
- ¹⁴ Ibid., 44.
- ¹⁵ Ibid., 45.
- ¹⁶ Ibid.
- ¹⁷ Ibid., 113-114.
- ¹⁸ Ibid., 113-115.
- ¹⁹ Ibid.
- ²⁰ Ibid.
- ²¹ Ibid.
- ²² Ibid., 141.
- ²³ Ibid.
- ²⁴ Ibid., 143.
- ²⁵ Ibid., 145.
- ²⁶ Ibid.
- ²⁷ Ibid., 162.
- ²⁸ Richard P. Hallion, Roger Cliff, and Phillip C. Saunders. *The Chinese Air Force – Evolving Concepts, Roles, and Capabilities*. (Washington, D.C.: Institute for National Strategic Studies (INSS), 2012), 158.
- ²⁹ Ibid., 159.
- ³⁰ Ibid., 159.
- ³¹ Ibid.
- ³² Ibid., 160.
- ³³ Ibid.
- ³⁴ Peter W. Singer. *Wired for War – The Robotics Revolution and Conflict in the 21st Century*. (New York, NY: Penguin Books, 2009), 246.
- ³⁵ Qiao Liang and Wang Xiangsui. *Unrestricted Warfare*. (Beijing: PLA Literature and Arts Publishing House, February 1999), 43.
- ³⁶ Lars I. Staveland. “Kinas hackere.” *Aftenposten*, 19 February 2013, and “Greatest hits – Milestones in the history of information warfare.” *Economist*, 24 May 2007.
- ³⁷ Qiao and Xiangsui, *Unrestricted War*, 24.
- ³⁸ Ibid.
- ³⁹ Jason E. Bruzdinski, “Demystifying Shashoujian: China’s ‘Assassin’s Mace’ Concept,” in *Civil–Military Change in China: Elites, Institutes, and Ideas After the 16th Party Congress*, edited by Larry Wortzel and Andrew Scobell. (Carlisle, PA: U.S. Army War College, 2004), 313 and 319.
- ⁴⁰ Krepinevich, *Why AirSea Battle?*, 14.
- ⁴¹ Bruzdinski, *Demystifying Shashoujian*, 334.
- ⁴² Ibid., 316.

-
- ⁴³ Christopher P. Cavas and Vago Muradian. “New Program Could Redefine AF–Navy Joint Ops.” *Air Force Times*, 16 November 2009, and Krepinevich, *Why AirSea Battle?*, 1.
- ⁴⁴ Joint Operational Access Concept (JOAC) Version 1.0., 17 January 2012, “Foreword.”
- ⁴⁵ *Ibid.*, 4.
- ⁴⁶ Krepinevich, *Why AirSea Battle?*, 1.
- ⁴⁷ Joint Operational Access Concept (JOAC), 6.
- ⁴⁸ *Ibid.*
- ⁴⁹ *Ibid.*, 7.
- ⁵⁰ *Ibid.*, 8.
- ⁵¹ *Ibid.*
- ⁵² *Ibid.*, 9.
- ⁵³ *Ibid.*, 12.
- ⁵⁴ *Ibid.*, 16.
- ⁵⁵ *Ibid.*, 17.
- ⁵⁶ *Ibid.*, 17-27.
- ⁵⁷ *Ibid.*, 37.
- ⁵⁸ *Ibid.*
- ⁵⁹ *Ibid.*
- ⁶⁰ Andrew Scobell, *Show of Force: The PLA and the 1995–1996 Taiwan Strait Crisis*. (Stanford, CA: Asia/Pacific Research Center (A/PARC), January 1999), 5.)
- ⁶¹ *Ibid.*
- ⁶² *Ibid.*
- ⁶³ Cliff et al., *Shaking the Heavens and Splitting the Earth*, 40.
- ⁶⁴ *Anti-Secession Law of 2005*, article 8, People’s Republic of China – Third Session of the Tenth National People’s Congress, March 14, 2005.
- ⁶⁵ Scobell, *Show of force*, 5.
- ⁶⁶ Martin Edmonds and Michael M. Tsai, eds. *Taiwan’s Security and Air Power*. (New York, NY: RoutledgeCurzon, 2004) xiv.
- ⁶⁷ Dan Blumenthal et al., “Deter, Defend, Repel, and Partner – A Defense Strategy for Taiwan.” (*American Enterprise Institute* and the *Project 2049 Institute*, July 2009), 17.
- ⁶⁸ Paris E. Crenshaw III, “U.S.-China Relations: Communication and Misperception in the Taiwan Strait.” (Master’s thesis, Naval Postgraduate School, 2003) 89-91.
- ⁶⁹ James C. Mulvenon, *Chinese Information Operations Strategies in a Taiwan Contingency: Testimony Before the U.S.-China Economic and Security Review Commission Hearing*, 15 September 2005, 8.
- ⁷⁰ Andrew F. Krepinevich, *The Military-Technical Revolution: A Preliminary Assessment*. (Washington, DC: Center for Strategic and Budgetary Assessments (CSBA), 2003), 24, and James C. Mulvenon, *Chinese Information Operations Strategies in a Taiwan Contingency*, 8.
- ⁷¹ James C. Mulvenon, *Chinese Information Operations Strategies in a Taiwan Contingency*, 3.
- ⁷² Bryan Krekel, “Capability of the People’s Republic of China to Conduct Cyber Warfare and Computer Network Exploitation.” Prepared for The US-China Economic and Security Review Commission, 9 October 2009, 10.
- ⁷³ Chih-Heng Yang and Tzu-Yun Su, in Edmonds & Tsai, *Taiwan’s Security and Air Power*, 66.
- ⁷⁴ Edmonds & Tsai, *Taiwan’s Security and Air Power*, 4.
- ⁷⁵ *Ibid.*, 5.
- ⁷⁶ *Ibid.*, 3.
- ⁷⁷ *Ibid.*
- ⁷⁸ *Ibid.*
- ⁷⁹ Hallion, Cliff and Saunders, *The Chinese Air Force*, 330-331.
- ⁸⁰ *Ibid.*, 327.
- ⁸¹ *Ibid.*, 328.
- ⁸² David A. Shlapak et al., *A Question of Balance – Political Context and Military Aspects of the China-Taiwan Dispute*. (Santa Monica, CA: RAND, 2009) 53.
- ⁸³ Chih-Heng Yang and Tzu-Yun Su, in Edmonds & Tsai, *Taiwan’s Security and Air Power*, 59 and Sinodefence.com. “Su-30MKK Multirole Fighter Aircraft.” <http://www.sinodefence.com/airforce/fighter/su30.asp>

-
- ⁸⁴ Chih-Heng Yang and Tzu-Yun Su, in Edmonds & Tsai, *Taiwan's Security and Air Power*, 66.
- ⁸⁵ Ibid.
- ⁸⁶ Hallion, Cliff and Saunders, *The Chinese Air Force*, 330.
- ⁸⁷ Ibid.
- ⁸⁸ Ibid., 160.
- ⁸⁹ Ibid., 329.
- ⁹⁰ Edmonds & Tsai, *Taiwan's Security and Air Power*, xv.
- ⁹¹ Chih-Heng Yang and Tzu-Yun Su, in Edmonds & Tsai, *Taiwan's Security and Air Power*, 66.
- ⁹² David A. Shlapak et al., *A Question of Balance*, 103.
- ⁹³ Ibid., 114.
- ⁹⁴ Ibid., 106.
- ⁹⁵ Ibid., 100-103.
- ⁹⁶ Roger Cliff et al., *Entering the Dragon's Lair* 2007, 79.
- ⁹⁷ Cliff et al., *Shaking the Heavens and Splitting the Earth*, 34, xvii.
- ⁹⁸ Ibid.
- ⁹⁹ Mark Gunzinger and Chris Dougherty. *Outside-In: Operating from Range to Defeat Iran's Anti-Access and Area-Denial Threats*. (Washington, D.C.: Center for Strategic and Budgetary Assessment (CSBA), 2011), 48.
- ¹⁰⁰ Krepinevich, *Why AirSea Battle?*, 22.
- ¹⁰¹ Ibid.
- ¹⁰² Andrew S. Erickson and Lyle J. Goldstein. "China's Future Nuclear Submarine Force." *Naval War College Review*, Winter 2007, 67.
- ¹⁰³ Krepinevich, *Why AirSea Battle?*, 18, and Richard Fisher, Jr., "Growing Asymmetries in the China-Japan Naval Balance." *International Assessment and Strategy Center*, 22 November 2005, 1.
- ¹⁰⁴ Andrew S. Erickson and David D. Yang. "Using the Land to Control the Sea? Chinese Analysts Consider the Anti-ship Ballistic Missile." *Naval War College Review*, Autumn 2009, 1, and Krepinevich, *Why AirSea Battle?*, 18.
- ¹⁰⁵ Erickson & Yang, *Using the Land to Control the Sea?*, 1.
- ¹⁰⁶ Eric Hagt and Matthew Durnin. "China's Anti-ship Ballistic Missile, Developments and Missing Links." *Naval War College Review*, Autumn 2009, 104.
- ¹⁰⁷ Mark Stokes, *China's Strategic Modernization: Implications for the United States*. (Carlisle, PA: Strategic Studies Institute, September 1999), 41.
- ¹⁰⁸ Krepinevich, *Why AirSea Battle?*, 20.
- ¹⁰⁹ Ibid., 15.
- ¹¹⁰ Robert Green, "The Unsinkable Aircraft Carrier." *Taiwan Today*, 05 January 2005.
- ¹¹¹ Kaplan, *Monsoon*, 284-285.
- ¹¹² Green, "The Unsinkable Aircraft Carrier."
- ¹¹³ Roger Cliff et al., *Entering the Dragon's Lair – Chinese Anti-access Strategies and Their Implications for the United States*. (Santa Monica, CA: RAND, 2007), 112.
- ¹¹⁴ Ronald O'Rourke, "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress." *Congressional Research Service*, 21 October 2009, 4.
- ¹¹⁵ Kaplan, *Monsoon*, 284-285.
- ¹¹⁶ O'Rourke, *China Naval Modernization*, 98.
- ¹¹⁷ Gunzinger and Dougherty. *Outside-In*, 15.
- ¹¹⁸ Ibid., 50.
- ¹¹⁹ Ming-Yen Tsai, in Edmonds & Tsai, *Taiwan's Security and Air Power*, 147.
- ¹²⁰ Edmonds & Tsai, *Taiwan's Security and Air Power*, 5.
- ¹²¹ Robert H. Mackintosh, "The 2nd Missile Battalion, 71st Artillery (Nike-Hercules) Defends Northern Taiwan 1958-1959." <http://www.2-71adataiwan.com/Member%20Articles/RHM%20Deployment%20Article.htm>
- ¹²² Martin Edmonds, in Edmonds & Tsai, *Taiwan's Security and Air Power*, 25.
- ¹²³ Barry D. Watts, *Six Decades of Guided Munitions and Battle Networks: Progress and Prospects*. (Washington, DC: Center for Strategic and Budgetary Assessments (CSBA), 2007), 286, and Bill Gertz, "The Air Force and Missile Defense." *Air Force Magazine*, February 1996.
- ¹²⁴ Defense-update.com. "Skyguard – Laser Based Counter-MANPADS/C-RAM System." <http://defense-update.com/products/s/skyguard-laser.htm>

-
- ¹²⁵ Defense-update.com, *Skyguard*, 1.
- ¹²⁶ Gunzinger and Dougherty. *Outside-In*, 28 and 47, Gertz, “The Air Force and Missile Defense,” and Andrew Krepinevich, Barry Watts and Robert Work. *Meeting the Anti-Access and Area-Denial Challenge*. (Washington, DC: Center for Strategic and Budgetary Assessments (CSBA), 2003), ii.
- ¹²⁷ Gunzinger and Dougherty. *Outside-In*, 89.
- ¹²⁸ Carlo Kopp and Peter A. Goon. “Inquiry into Australian Defence Force Regional Air Superiority.” *Air Power Australia*, 17 February 2006, 42-43.
- ¹²⁹ Gunzinger and Dougherty. *Outside-In*, 17.
- ¹³⁰ Ming-Yen Tsai, in Edmonds & Tsai, *Taiwan’s Security and Air Power*, 148.
- ¹³¹ Gunzinger and Dougherty. *Outside-In*, 94.
- ¹³² Eric Grove, in Martin Edmonds and Michael M. Tsai, *Taiwan’s Maritime Security*. (New York, NY: RoutledgeCurzon, 2003), 170.
- ¹³³ Eric Grove, in Edmonds & Tsai, *Taiwan’s Maritime Security*, 171.
- ¹³⁴ Alex Bellah, *Shifting Paradigms: Taiwan’s New Asymmetric Strategy to Deter Blockade*. (Williamsburg, VA: The Project on International Peace and Security (PIPS), 2010), 2, and Eric Grove, in Edmonds & Tsai, *Taiwan’s Maritime Security*, 171.
- ¹³⁵ Gunzinger and Dougherty. *Outside-In*, 84.
- ¹³⁶ Adm. Jay Johnson, “Anytime, Anywhere: A Navy for the 21st Century.” *Proceedings*, November 1997, 3.
- ¹³⁷ Gunzinger and Dougherty. *Outside-In*, 82.
- ¹³⁸ David A. Shlapak et al., *A Question of Balance*, 112.
- ¹³⁹ Peter S. Ross. “The Problem With the Pivot – Obama’s New Asia Policy is unnecessary and counterproductive.” *Foreign Affairs*, November/December 2012, 82.
- ¹⁴⁰ “Transforming Defense”. *National Defense Panel*, Washington, DC: US GPO, December 1997, 2.

Bibliography

“Admiral Willard Discusses China, North Korea.” *Eagle World News*, 21 October 2009.

Bellah, Alex. *Shifting Paradigms: Taiwan's New Asymmetric Strategy to Deter Blockade*. Williamsburg, VA: The Project on International Peace and Security (PIPS), 2010.

Blumenthal, Dan, Michael Mazza, Gary J. Schmitt, Randall Schriver, Mark Stokes. “Deter, Defend, Repel, and Partner – A Defense Strategy for Taiwan.” *American Enterprise Institute and the Project 2049 Institute*, July 2009.

Bruzdzinski, Jason E. “Demystifying *Shashoujian*: China's ‘Assassin's Mace’ Concept.” In *Civil–Military Change in China: Elites, Institutes, and Ideas After the 16th Party Congress*, edited by Larry Wortzel and Andrew Scobell. Carlisle, PA: U.S. Army War College, 2004.

Cavas, Christopher P., and Vago Muradian. “New Program Could Redefine AF-Navy Joint Ops.” *Air Force Times*, 16 November 2009.

Cliff, Roger, Mark Burles, Michael S. Chase, Derek Eaton, and Kevin L. Pollpeter. *Entering the Dragon's Lair - Chinese Anti-access Strategies and Their Implications for the United States*. Santa Monica, CA: RAND, 2007.

Cliff, Roger, John Fei, Jeff Hagen, Elizabeth Hague, Eric Heginbotham, and John Stillion. *Shaking the Heavens and Splitting the Earth – Chinese Air Force Employment Concepts in the 21st Century*. Santa Monica, CA: RAND, 2011.

Crenshaw, Paris E. III. “U.S.-China Relations: Communication and Misperception in the Taiwan Strait.” Master's thesis, Naval Postgraduate School, 2003.

Defense-update.com. “Skyguard – Laser Based Counter-MANPADS/C-RAM System.” <http://defense-update.com/products/s/skyguard-laser.htm> (accessed at 05 December 2012).

Edmonds, Martin, Michael M. Tsai, eds. *Taiwan's Maritime Security*. New York, NY: RoutledgeCurzon, 2003.

Edmonds, Martin, Michael M. Tsai, eds. *Taiwan's Security and Air Power*. New York, NY: RoutledgeCurzon, 2004.

Erickson, Andrew S., and David D. Yang. "On the Verge of a Game-Changer." *US Naval Institute Proceedings*, May 2009.

Erickson, Andrew S., and David D. Yang. "Using the Land to Control the Sea? Chinese Analysts Consider the Anti-ship Ballistic Missile." *Naval War College Review*, Autumn 2009.

Erickson, Andrew S., and Lyle J. Goldstein. "China's Future Nuclear Submarine Force." *Naval War College Review*, Winter 2007.

Fisher, Jr., Richard. "Growing Asymmetries in the China-Japan Naval Balance." *International Assessment and Strategy Center*, 22 November 2005.

Gertz, Bill. "The Air Force and Missile Defense." *Air Force Magazine*, February 1996.

"Greatest hits – Milestones in the history of information warfare." *Economist*, 24 May 2007.

Green, Robert. "The Unsinkable Aircraft Carrier." *Taiwan Today*, 05 January 2005.

Gunzinger, Mark, and Chris Dougherty. *Outside-In: Operating from Range to Defeat Iran's Anti-Access and Area-Denial Threats*. Washington, D.C.: Center for Strategic and Budgetary Assessment (CSBA), 2011.

Hagt, Eric, and Matthew Durnin. "China's Anti-ship Ballistic Missile, Developments and Missing Links." *Naval War College Review*, Autumn 2009.

Hallion, Richard P., Roger Cliff, and Phillip C. Saunders. "The Chinese Air Force – Evolving Concepts, Roles, and Capabilities." Washington, D.C.: Institute for National Strategic Studies (INSS), 2012.

Johnson, ADM Jay. "Anytime, Anywhere: A Navy for the 21st Century." *Proceedings*, November 1997.

Kaplan, Robert D. *Monsoon – The Indian Ocean and the Future of American Power*. New York, NY: Random House, 2011.

Kopp, Carlo, and Peter A. Goon. “Inquiry into Australian Defence Force Regional Air Superiority.” *Air Power Australia*, 17 February 2006.

Krekel, Bryan. “Capability of the People’s Republic of China to Conduct Cyber Warfare and Computer Network Exploitation.” Prepared for The US-China Economic and Security Review Commission, 9 October 2009.

Krepinevich, Andrew F. *Why AirSea Battle?* Washington, D.C.: Center for Strategic and Budgetary Assessment (CSBA), 2010.

Krepinevich, Andrew, Barry Watts and Robert Work. *Meeting the Anti-Access and Area-Denial Challenge*. Washington, DC: Center for Strategic and Budgetary Assessments (CSBA), 2003.

Krepinevich, Andrew F. *The Military-Technical Revolution: A Preliminary Assessment* Washington, DC: Center for Strategic and Budgetary Assessments (CSBA), 2003.

Liang, Qiao and Wang Xiangsui. *Unrestricted Warfare*. Beijing: PLA Literature and Arts Publishing House, February 1999.

Mackintosh, Robert H. “The 2nd Missile Battalion, 71st Artillery (Nike-Hercules) Defends Northern Taiwan 1958-1959.” <http://www.2-71adataiwan.com/Member%20Articles/RHM%20Deployment%20Article.htm> (accessed at 11 February 2013).

Mulvenon, James C. *Chinese Information Operations Strategies in a Taiwan Contingency: Testimony Before the U.S.-China Economic and Security Review Commission Hearing*, 15 September 2005.

“Transforming Defense”. *National Defense Panel*, Washington, DC: US GPO, December 1997.

O'Rourke, Ronald. "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress." *Congressional Research Service*, 21 October 2009.

People's Republic of China. *Anti-Secession Law*. Third Session of the Tenth National People's Congress, March 14, 2005.

Ross, Peter S. "The Problem With the Pivot – Obama's New Asia Policy is unnecessary and counterproductive." *Foreign Affairs*, November/December 2012.

Scobell, Andrew. *Show of Force: The PLA and the 1995–1996 Taiwan Strait Crisis*. Stanford, CA: Asia/Pacific Research Center (A/PARC), January 1999.

Shlapak, David A., David T. Orletsky, Toy I. Reid, Murray Scot Tanner, and Barry Wilson. *A Question of Balance – Political Context and Military Aspects of the China-Taiwan Dispute*. Santa Monica, CA: RAND, 2009.

Sinodefense.com. "Su-30MKK Multirole Fighter Aircraft."
<http://www.sinodefence.com/airforce/fighter/su30.asp> (accessed at 02 December 2012)

Singer, Peter W. "Wired for War – The Robotics Revolution and Conflict in the 21st Century." New York, NY: Penguin Books, 2009.

Staveland, Lars I. "Kinas hackere." *Aftenposten*, 19 February 2013

Stokes, Mark. *China's Strategic Modernization: Implications for the United States*. Carlisle, PA: Strategic Studies Institute, September 1999.

US Congress. *Taiwan Relations Act (TRA)*. Public Law 96-8 96th Congress, 1 January 1979.

Watts, Barry D. *Six Decades of Guided Munitions and Battle Networks: Progress and Prospects*. Washington, DC: Center for Strategic and Budgetary Assessments (CSBA), 2007.